

# **Bringing Science and Technology to Security Operations**

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LCol Colin Murray, Senior Military Officer and Susan McIntyre, Knowledge Manager  
Defence Research and Development Canada – Centre for Security Science  
Ottawa ON K1A 0K2

## **Introduction**

The year 2010 was a demanding period for Canada's security communities. After years of inter-agency planning and exercising for the Vancouver 2010 Olympic Games, and the G8 and G20 Summits, it would be natural to conclude that Canada's ability to respond to a public security event had never been so great. Given the complexity of the challenges associated with international events of this magnitude in such a short timeframe, it is interesting to understand how Canada's security community was able to accomplish the mission at hand. One player that has emerged with a bright future as a key enabler to domestic security is Canada's Science and Technology (S&T) community.

During V2010 and the Summits, a network of Scientific Advisors was embedded within key federal and provincial operational domains to support planning, exercises, and real-time security operations. This group also served as the vanguard to a robust S&T reach-back capability, which offered responder communities an opportunity to have timely access to some of the best scientific advice and expertise in the country. Scientists actively engaged in key operational organizations such as the RCMP Integrated Support Unit and the Government of Canada Operations Centre, and delivered S&T reach-back that incorporated a unique 'whole-of-government' approach which called on support from across federal science-based departments and agencies, as well as academia. For many of the uniformed operators across responder communities, access to this level of expertise became critical, especially as it applied to complex, non-traditional security challenges. As one key V2010 planner said, "In my mind there is no question that the Olympics, G8, and G20 validated the concept of embedded S&T support during security operations. I see scientific support as a key risk mitigator in our business."

Given the extent to which S&T contributed to public security events in 2010, it is of interest to know where this support came from, how it was organized, and whether or not it has a role in the future.

## Background

S&T support for the safety and security domain was an integral part of the Public Safety and Anti-Terrorism initiative in 2002<sup>1</sup>. Initial S&T funding was focused on counter-terrorism and was highly successful at mobilizing Canada's CBRN S&T community. Scientific Clusters (i.e., *de facto* Communities of Practice) were established from across government and were successful in breaking down traditional stovepipes, leading to well networked and robust S&T capabilities. During that time, a paradigm emerged pertaining to the value of timely scientific advice and expertise from across S&T-based agencies during CBRNE counter-terror operations. This concept was adopted at the Defence Research and Development Canada – Centre for Security Science (DRDC CSS), which was created in 2006 through an agreement between Public Safety Canada and the Department of National Defence. Its mission is to strengthen, through investments in science and technology, Canada's ability to prevent, prepare for, respond to, and recover from accidents, natural disasters, or terrorist and criminal acts that impact the safety and security of Canadians. With this expanded mandate beyond counter-terrorism, the Centre has emerged as a leader within Canada's safety and security domain, bringing integrated S&T support from across departments and agencies to support planning and policy development, as well as safety and security operations.

## S&T Support to Ops

V2010 provided the S&T community the opportunity to further explore and validate the 'support to operations' model. In 2008, in response to leadership from across the key security delivery organizations, the DRDC Centre for Security Science took on the role of coordinating science support from across federal science-based departments and agencies. A project was stood up to assist the functional authorities in reducing the security risk associated with V2010 through the coordinated application of S&T. The Centre was able to exploit the established scientific networks to build a delivery model based on four key components. First, recognizing that 'trusted relationships' would be key conditions for success, there was a conscious investment in establishing relationships, which included embedding Scientific Advisors within the operational planning teams. Second, a strong reach-back mechanism to other federal S&T personnel was established to backup the Scientific Advisors, and to ensure timely support could be delivered to meet the operational tempo. This was critical to the integrity of the support provided to Security teams. Third, scientists were integrated within the exercises planning and delivery teams to focus on realistic scenario development, as well as real-time and post-exercise analysis. This activity also served to reinforce the trusted relationships. Finally, at the request of the operational security teams, elements of S&T were deployed to support real-time operations. These key components of the S&T delivery are reflected in Support to Operations model at Figure 1.

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<sup>1</sup> In response to the September 11<sup>th</sup> terrorist attacks on the United States, the Canadian government announced the Public Safety and Anti-Terrorism Initiative to support the government's commitment to fight terrorism and address related national security and public safety concerns. See : <http://www.justice.gc.ca/eng/pi/eval/rep-rap/07/psat-spat/sum-som/p0.html>

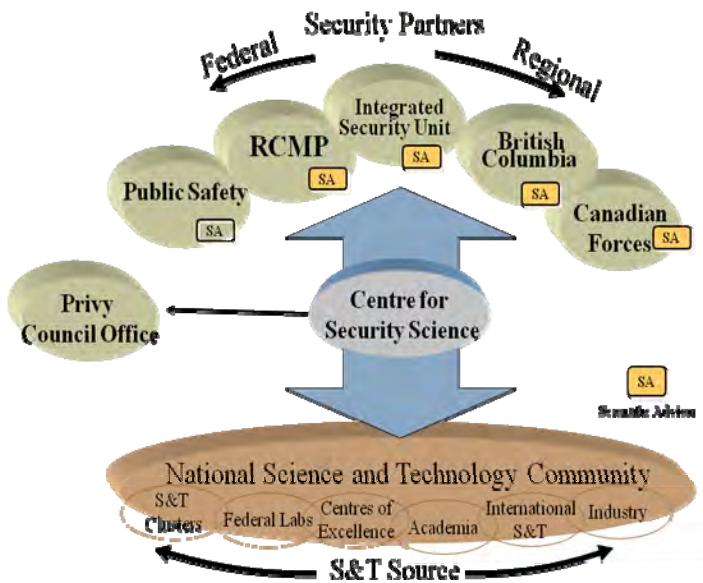


Figure 1: V2010 S&T Support to Operations Model

Perhaps the best S&T showcase for V2010 and the Summits was the cluster of mobile laboratories coined as ‘Science Town’, which included participation from Environment Canada, Health Canada, Natural Resources Canada, RCMP, the Public Health Agency of Canada, Director General Nuclear Safety (Department of National Defence) and DRDC. This deployed capability supported the safety and security authorities across the CBRN domain, with particular support for the National CBRNE Response Team. Science Town represented world class capabilities in terms of monitoring risks, processing unknown samples and delivering timely expert advice to support critical safety and security decisions. The June



Figure 2: Science Town  
(photo courtesy of Major D. Jones)

deployment during the G8 and G20 Summits is pictured in figure 2.

## Challenges

Implementing the S&T Support to Operations model was not without challenges. There existed a ‘cultural’ resistance all around, from scientific staff and departments to operators. Initially it was awkward for the security teams to accept embedded scientific advice, especially within the trust-based policing community. For many of the scientists, delivering relevant advice within a very aggressive decision loop during high tempo operations was non-traditional and often challenging. Doing all of this within the scope of existing public service collective agreements also added to the complexity of the overall coordination. Some science-based departments and agencies legitimately struggled to link their participation in a security operation to their existing legislated mandate. In some cases, this made it difficult for them to substantiate participation. Each success contributed to a momentum which served to overcome the challenges, leading to a profound achievement in the way S&T was delivered to support the safety and security teams.

## Enablers

As part of the post-event analysis, DRDC CSS looked into the key enablers that contributed to the successful integration of S&T support. As a whole-of-government initiative, it is clear that senior leadership engagement was a key factor in overcoming many of the hurdles. For example, the Privy Council Office of the Coordinator for 2010 Olympics and G8 Security, with linkage to the Deputy Minister Committee responsible for V2010 security, was instrumental in setting the conditions for success across the various departments and agencies by facilitating decisions associated with the role and integration of S&T. Senior support was further enhanced through project governance that included representation from each of the operational federal and provincial partners. The operator buy-in at this level assured acceptance and exploitation of the S&T outputs. Perhaps the strongest enabler was the early establishment of trusted relationships, which served to overcome the cultural barriers that would have otherwise precluded successful outcomes.

## Conclusion

If simple metrics were the indicators of the success of S&T support to operations, then the 200 scientists and technologists engaged over the period and the more than 150 reports and publications would be strong evidence of the value. The true worth was found in the reduced risk and how the safety and security partners were enabled in their decision making and planning. Efficiencies in operations centre layouts, communication systems, and in vehicle and pedestrian screenings are but a few examples which can be attributed to evidence-based scientific advice.

What does this experience indicate about the future of S&T in operations? Relationships and concepts developed for V2010 have resulted in further integration between S&T and security operations. For example, the DRDC Centre for Security Science continues to support the RCMP and others on a Web 2.0 based Major Event Security Framework, which enhances multi-agency integrated planning and serves as a knowledge-bank for future event planning. Methods used to support physical security teams during V2010 are now being applied to national research pertaining to critical infrastructure. As well, international partners are also calling on S&T

capabilities developed for V2010 to support security planning for future events, such as the London 2012 Summer Olympics. There is an opportunity now to build on the success of this activity and to institutionalize an integrated S&T function that would contribute to national resiliency and readiness, and further protect the quality of life for Canadians.

*Colin Murray was the Project Director responsible for enabling V2010 safety and security teams through coordinated S&T. Susan McIntyre led an after event review on whole-of-government V2010 security.*